

**CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

Autumn Examinations 2011

Module Title: Enzymes, Energy & Disease (CA)

Module Code: BIOM 6001

School: Biological Science

Programme Title:

Bachelor of Science in Applied Biosciences & Biotechnology – Year 1

Bachelor of Science (Honours) in Pharmaceutical Biotechnology – Year 1

Bachelor of Science (Honours) in Nutrition and Health Science – Year 1

Bachelor of Science in Analytical & Pharmaceutical Chemistry – Year 1

Bachelor of Science (Honours) in Analytical Chemistry with Quality Assurance – Year 1

Programme Code: SBIOS_7_Y1
SPHBI_8_Y1
SHNSC_8_Y1
SCHEM_7_Y1
SCHQA_8_Y1

External Examiner(s): Dr Don Faller

Internal Examiner(s): Ms Margaret Lane, Ms Richenda Kiernan

Instructions: Answer 4 Questions.
Question 1 is compulsory.

Duration: 2 Hours

Sitting: Autumn 2011

Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

Q1. is COMPULSORY

Q1. Answer all parts

- (a) Draw a rough graph to illustrate the effect of temperature on the activity of the enzyme amylase. (2 Marks)
- (b) What reactions do the following enzymes catalyse:
Amylase, Catalase, Renin, Urease (4 Marks)
- (c) Explain why apple tissue turns brown when exposed to oxygen. (3 Marks)
- (d) Describe 2 methods you could use to detect the presence of microorganisms. (3 Marks)
- (e) What is a wet mount and how is it prepared? (3 Marks)
- (f) What is the purpose of fixing in bacterial staining procedures? (3 Marks)
- (g) Explain how heat sensitive liquids are sterilized. (3 Marks)
- (h) What information about a bacterial cell is obtained from a simple stain. (2 Marks)
- (i) What is the purpose of iodine in the gram stain. (2 Marks)

Q2. Write explanatory notes on each of the following:

- (a) Enzyme structure
- (b) Activation energy
- (c) Co-enzymes and Co-factors
- (d) Enzyme inhibitors
- (e) Feedback inhibition (25 Marks)

Q3. Describe the processes involved in aerobic respiration and compare the energy produced in aerobic respiration with that produced in the lactic acid fermentation.

(25 Marks)

Q4. Write descriptive notes on each of the following: Mention cell type, habitat, pathogenicity and general importance for each in your answer.

- (a) Fungi
- (b) Protozoa
- (c) Algae
- (d) Non-living members of the microbial world
- (e) Bacteria

(25 Marks)

Q5. Write an account of each of the following techniques used to sterilize equipment.

- (a) Autoclave
- (b) Filtration
- (c) Radiation
- (d) Sterilizing gases
- (e) Explain how spread plate and pour plate techniques are used to isolate pure cultures.

(20 Marks)

(5 Marks)

Q6. List and discuss the role of Proteins, Carbohydrates, Lipids and Vitamins in a healthy diet.

(25 Marks)